$U_2 = \beta' U_{sat} = \frac{U_{sat}}{2}$ *car* $R_1 = R_2$ *et* $\beta = \frac{R_1}{R_1 + R_2}$

$U_3 = -\beta U_{sat} = \frac{-U_{sat}}{2}$

b. $u_c = \left[u_c(i) - u_c(f)\right] e^{-\frac{t}{\tau}} + u_c(f)$

or $u_c(i) = -\frac{U_{sat}}{2}$ *et* $u_c(f) = U_{sat}$

ce qui donne $u_c(t) = -\frac{3}{2} U_{sat}\ e^{-\frac{T_1}{\tau}} + u_{sat}$

$u_c(t) = u_{sat}\left[1 - \frac{3}{2} e^{-\frac{t}{\tau}}\right]$

c. A la date T_2 $\quad u_c(T_2) = \frac{U_{sat}}{2}$

$\Rightarrow \frac{U_{sat}}{2} = U_{sat}\left[1 - \frac{3}{2} e^{-\frac{T_1}{\tau}}\right]$

$\frac{3}{2} e^{-\frac{T_1}{\tau}} = \frac{1}{2} \Rightarrow T_1 = \tau Ln3 == RCLn3$

d. En utilisant l'expression de $u_c = \left[u_c(i) - u_c(f)\right] e^{-\frac{t}{c}} + u_c(f)$ et en prenant une nouvelle origine de temps o qui correspond à T_1

$u_c(t) = \frac{U_{sat}}{2}$, $u_c(f) = -u_{sat}$

$u_c = \left[+\frac{U_{sat}}{2} + U_{sat}\right] e^{-\frac{t}{\tau}} - U_{sat}$

$U_c(+) = U_{sat}\left[\frac{3}{2} e^{-\frac{t}{\tau}} - 1\right]$

e. La durée de l'état bas est T_2

à $t = T_2$ $\quad u_2(T_2) = -\frac{U_{sat}}{2} = U_{sat}\left[\frac{3}{2} e^{-\frac{T_2}{\tau}} - 1\right]$

$\frac{3}{2} e^{-\frac{T_2}{\tau}} = \frac{1}{2}$ *ce qui donne* $T_2 = \tau Ln3 = RCLn3$

La période $T = T_1 + T_2 = 2RCLn3 = 2{,}2.10^{-3} S$

$N = \frac{1}{T} = \frac{1}{2RCLn3} = 455Hz$

f. $\delta = \frac{T_1}{T} = \frac{RCLn3}{2RCLn3} = 0{,}5$

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